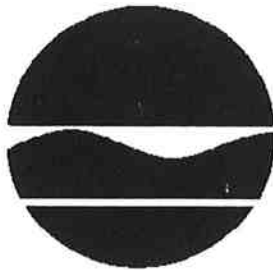


**SUPERFUND STANDBY PROGRAM**  
**New York State**  
**Department of Environmental Conservation**  
**50 Wolf Road**  
**Albany, New York 12233-7010**

**SITE ID 211: LOCKHEED MARTIN and GENERAL ELECTRIC's**  
**COURT STREET FACILITY**

**SITE SUMMARY REPORT**  
**REVISION 1**



**Onondaga Lake Project**  
**Task 5: 104(e) Review**

**Site No. 734030-002**  
**Work Assignment Number D003060-9**

Prepared by

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## CONTENTS

<b>1.0</b>	<b>SITE DESCRIPTION</b>	<b>1</b>
1.1	Location	1
1.2	Geology	1
1.3	Hydrogeology	2
1.4	Surface Water Hydrology	3
<b>2.0</b>	<b>SITE HISTORY</b>	<b>4</b>
2.1	Owners/Operators	4
2.2	Site Operations	4
2.3	Generation and Disposal of Wastes	6
<b>3.0</b>	<b>POTENTIAL PATHWAYS FOR RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM</b>	<b>9</b>
3.1	Soil	9
3.2	Surface Water	9
3.3	Groundwater	10
3.4	Air	10
3.5	County Sewer System	11
<b>4.0</b>	<b>LIKELIHOOD OF RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM</b>	<b>12</b>
4.1	Documented Releases	12
4.2	Threat of Release to the Lake System	13
<b>5.0</b>	<b>POTENTIAL FOR ADVERSE IMPACTS TO LAKE SYSTEM DUE TO A RELEASE OR THREAT OF A RELEASE</b>	<b>23</b>
5.1	Hazardous Substance Characteristics	23
5.2	Quantity of Substance	26
5.3	Levels of Contaminants	27
5.4	Impacts on Special Status Areas	27
<b>6.0</b>	<b>SUMMARY OF CONCERNS</b>	<b>28</b>
	<b>REFERENCES</b>	<b>29</b>
FIGURE 1	Site Location: Court Street Facility	
FIGURE 2	Study Area and Building Plan	
FIGURE 3	Buildings 5, 5A - Site Plan with Outfall Locations	
FIGURE 4	Buildings 2, 3, 4 - Site Plan with Outfall Locations	

## **1.0 SITE DESCRIPTION**

In general, the information referenced in this report was obtained from the 104(e) responses of both Lockheed Martin Corporation (Company ID 2002, formerly Martin Marietta Corp.) and General Electric Company (Company ID 2003). Information obtained from other sources is noted, as necessary.

### **1.1 Location**

The Court Street (CS) facility is located on Court Street and Deere Road in the Town of DeWitt, Onondaga County, New York. Figure 1 shows the location of the CS facility in relation to Onondaga Lake. Figure 2 shows a site/building plan of the CS facility (Wehran, July 1991). The CS site (Site 211) under study includes Buildings 2, 3, 4, 5, 5A, and A/B/C while the Tarbell Road site (Site 212) consists of Court Street Building 8 which will be discussed in a separate report. The CS site is bound by Court Street to the south, Ley Creek South Branch to the west, Rt. 298 to the north, and Sanders Creek to the north and east. Deere Road divides the site. The site is approximately 57 acres in area and contains approximately 555,000 square feet of building area; most of the remaining acreage consists of paved parking areas (Wehran, July 1991, p. 300066). A private elementary and secondary school exists along the southern perimeter of the site.

### **1.2 Geology**

The surficial geology of the Syracuse area was strongly influenced by the most recent glacial advance (Wisconsin age, 12,000 to 14,500 years ago). Syracuse occupies a region that was covered by Lake Iroquois, a large glacial lake situated in front of the ice margin. The broad flat-lying plains situated north from Syracuse to Lake Ontario were formed beneath Lake Iroquois and are characterized by lacustrine fine sand and silt deposits. Additional glacial

features common to the region are moraines, drumlins, U-shaped valleys and meltwater channels.

Onondaga Lake and all its major tributaries lie within glacial meltwater channels. These features originally were conduits carrying meltwater at large volumes and high velocities away from the glacier. Sediment types characteristically found in meltwater channels are sands and gravels. These relict features form important water bearing and transmitting units which form an irregularly branching, net-like pattern.

The bedrock geology of the greater Syracuse area includes Lower to Middle Paleozoic age sedimentary rocks predominated by carbonate (dolostone and limestone) and shale and containing some sandstone, siltstone and evaporites. Bedrock directly beneath the site (as well as underneath Onondaga Lake) is the Silurian Vernon Shale (Rickard and Fischer, 1970) which has low permeability, but does possess secondary porosity due to fractures.

### **1.3 Hydrogeology**

Soils at the CS site consist of moderately dense fine sand or silt with minor amounts of gravel in the uppermost two feet. Silts and clays are below the sand and silt stratum. Groundwater elevations were measured at three to four feet below the ground surface (IT, December 1991). According to the Syracuse East USGS quadrangle, ground surface elevations at the site range from approximately 380 to 390 feet NGVD. According to IT Corporation and Wehran, the data indicate that groundwater flow at the site is generally parallel to the slope of the topography to the north towards Sanders Creek and Ley Creek South Branch. As shown in Wehran's June 1993 groundwater contour map (Wehran, October 1993, p. 301511), groundwater elevations in the northwestern portion of the site range from approximately 373 feet near the creeks to 380 feet beneath Buildings 5 and 5A.

#### **1.4 Surface Water Hydrology**

Surface runoff from the site flows to the storm sewer system and to Ley Creek South Branch and Sanders Creeks on the western and northern boundaries of the site, respectively. The surface water elevation of Sanders Creek and Ley Creek South Branch at the corner of the site is about 373 feet NGVD. Sanders Creek discharges to Ley Creek South Branch at the northwest corner of the property, just upstream of Rt. 298. Ley Creek South Branch discharges into the main branch of Ley Creek about 1,000 feet downstream of the site. Ley Creek discharges to the upstream end of Onondaga Lake approximately four miles to the west of this confluence.

## **2.0 SITE HISTORY**

### **2.1 Owners/Operators**

According to Lockheed Martin Corporation (LMC), manufacturing operations at Court Street Buildings A, B, C, 2, 4, 5, and 5A (CS site, EPA Facility ID NYD990763203) were conducted exclusively by General Electric Company's (GE) Aerospace Division from 1956 to December 31, 1991 (LMC, Mailing No. 3, p. 000277). Martin Marietta Corporation (MMC) acquired the facility's lease from GE Aerospace in April 1993. In 1995, MMC and Lockheed Corporation merged, forming a new parent company, Lockheed Martin Corporation. Except for clean-out, closure, and remedial activities conducted by MMC and LMC, all manufacturing operations at the Court Street facility (not including Court Street Building 8, Tarbell Road) were conducted by GE and were terminated on December 31, 1991 (MMC, July 1993, p. 000115).

### **2.2 Site Operations**

The following is an excerpt from LMC's Mailing No. 3 (pp. 000277-000278):

GE Aerospace manufactured powdered lead, zirconate, titanate (PZT)-based ceramic parts for use in sonar devices at Building B from 1958 to 1982. Buildings A and C were support buildings used for office space and storage. After 1982, Building B was used for storage of surplus equipment. Buildings A, B, and C, located on the northeastern portion of the property, were demolished in 1991.

Building 1, at the intersection of Court Street and Deere Road, formerly occupied by GE, was vacant at the time of the Phase I Site Assessment (Wehran, July 1991). Building 2 consisted of a machine shop, electroplating area, painting lines, storage areas, tool shops, and office

space. The machine shop and plating areas in Building 2 were closed in 1976 and transferred to GE's Farrell Road Plant. An experimental hydroponics operation was located in Building 2 from 1978 to 1980. After 1980, Building 2 was used exclusively as a large computer and office space. Radar equipment was stored in a fenced-in area in the parking lot to the east of Building 2.

Offices and a small machine shop were located in Building 4 from 1956 to 1965. In 1965, a photography lab, an offset print shop, engineering and materials laboratories, and silkscreen shop moved to Building 4.

Manufacturing at Building 5 included sonar and radar equipment, printed circuit boards, and battery power packs. Operations included degreasing, metal preparatory baths, a waterfall paint booth, an annealing oven, mixing hoods, welding areas, and soldering benches. Engineering laboratories, offices, repair shops, a woodshop, and storage rooms were also located in Building 5. Building 5A was used to store production equipment, raw materials, and hazardous wastes. Building 5A was also used as an auxiliary radar and sonar testing area and a radar and sonar repair shop.

Manufacturing of specialized ceramic parts for use in military sonar devices was conducted at the Court Street facility from 1965 to 1982. According to a site investigation report by IT Corporation, the ceramic products were produced from a mixed slurry of powdered lead, zirconate, and titanate compounds (PZT) which was shaped and fired into the desired forms (IT Corporation, December 1991).

## **2.3 Generation and Disposal of Wastes**

A description of the wastes generated at the Court Street facility as well as the reported disposal methods is presented below.

### **2.3.1 General Electric Operations**

#### Hazardous Wastes

General Electric provided a 1979 tabulation which identified haulers and disposal sites for wastes generated from the Court Street facility since 1973, including Onondaga Environmental Systems which transported wastes to the Town of DeWitt Landfill, and Frontier Chemical Waste Process which transported wastes to Model City, NY and Canada. According to a footnote on the tabulation, details for pre-1970 disposal locations are not readily available (GE, Mailing No. 2, p. 001022). Quantities generated and disposed prior to 1979 were not provided by either GE or MMC/LMC.

It is also noted that wastes generated at GE's Court Street plant were transported, at times, to GE's Electronics Park facility for centralized pick-up by the disposal contractor (GE, Mailing No. 2, p. 000834). According to a 1981 Hazardous Waste Report, the CS plant had an interim status Hazardous Waste Storage Area, but it was only used when the Electronics Park interim status Hazardous Waste Storage Area was not available. The CS facility filed for non-regulated status in 1981 since all of the hazardous waste generated at the facility was shipped to Electronics Park (GE, Mailing No. 2, p.000711). Also, according to the 1982 Hazardous Waste Generator/Waste Transporter Annual Report, 1,1,1-trichloroethane (TCA, 880 gallons) and PCBs (800 pounds) generated at the CS facility were transported to the Electronics Park TSDF.

According to a 1977 New York State Hazardous Waste Survey, industrial process wastewater had been discharged to the sewer system for treatment at the Ley Creek Sewage Treatment Plant prior to discharge to Ley Creek. Upon closure of the Ley Creek treatment plant, the wastewater was rerouted to the Syracuse Metro Wastewater Treatment Facility. The wastes consisted of degreasing solutions, chlorinated and non-chlorinated solvents, electroplating solutions, and alkaline and acid-cleaning solutions (GE, Mailing No. 2, p. 000716). In the 1977 survey (p. 000716), GE reported the generation of the following wastes:

<b>Waste</b>	<b>Gallons/Yr</b>
1,1,1 Trichloroethane	110
Mixed Chlorinated Solvents	550
Non-chlorinated Solvents (aromatic & ketone)	990
Other Chlorinated Solvents	440
Oils	660
Copper Plating & Etching Solutions	220
Miscellaneous Metal Oxides	220
Dilute Aqueous Wastes	880
Hydrochloric Acid, less than 10%	110
Phosphoric Acid, Dilute	110
Sulfuric Acid, Dilute	110
Unknown Wastes	440
Hydrofluoric Acid, 5% or less	1,540
Liquid Cyanide Wastes	440

According to a 1984 Industrial Chemical Survey, GE reported an average annual usage of 1,750 gallons of TCA (degreasing and cleaning) and 11,350 pounds of PCBs (disposal of PCB-containing capacitors) with no PCBs remaining "on hand" (GE, Mailing No. 2, p. 000848).

### **2.3.2 Martin Marietta/Lockheed Martin Corp. Operations**

#### Hazardous Wastes

Although MMC and LMC have not conducted manufacturing operations at the Court Street facility, hazardous wastes were generated from closure and remedial activities. According to MMC's initial response, hazardous wastes, hazardous substances, and industrial wastes have been transported and disposed of legally during their period of operation (April 1993 to present) (MMC, Mailing No. 1, p. 000007). Laidlaw Environmental Services is the hazardous waste transporter/disposal contractor for MMC. MMC's review of manifests after April 1, 1993 indicated that all shipments were properly disposed of at facilities outside Onondaga County and thus outside the basin. Based on LMC's review of hazardous waste reports, the total quantity of hazardous wastes generated from the CS facility from 1985 to 1994 was 981 tons (LMC, Mailing No. 3, p. 000282).

#### Industrial Wastes

Wastes considered non-hazardous have also been handled by Laidlaw. Scrap metal including copper and steel has been transported for recycling and/or resale to Matlow facilities on Bridge Street in Solway and to Roth Steel in Syracuse. Laidlaw transported 3.4 tons of scrap metal in 1993 and 3.4 tons in the first quarter of 1994 from the CS facility (MMC, Mailing No. 1, p. 000008).

### **3.0 POTENTIAL PATHWAYS FOR RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM**

#### **3.1 Soil**

Soil on the Court Street site can be contaminated directly from release of manufacturing wastes to the drain system, from leaking underground storage tanks (USTs), or from spills from hazardous waste storage and handling areas. The extent of soil contamination is described in Section 4.

#### **3.2 Surface Water**

The direct discharge of drainage water via storm drains and the migration of contaminated groundwater are significant potential pathways of contamination to Sanders Creek and Ley Creek South Branch which converge downstream of the site and discharge to the main branch of Ley Creek and then to Onondaga Lake. As noted by Wehran, because of the numerous discharge vents on the roof of Building 5, roof runoff which flows into the storm system on site, may be contaminated with heavy metals from air emissions (Wehran, July 1991, p. 300089). In addition, contaminants in surficial soil may be transported to the nearby creeks in surface runoff.

GE's stormwater discharge SPDES permit applications (October 1992) for the CS facility were provided in MMC's response. According to the applications, stormwater from the area around Buildings 5 and 5A flowed to five outfalls (Outfalls 001 through 004 discharged to Sanders Creek and Outfall 005 discharged to Ley Creek South Branch upstream of the confluence with Sanders Creek, see Figure 3). Dry-weather flows at the most downstream outfalls (Outfalls 004 and 005) to the two creeks resulted from infiltration of groundwater into the piping. As per Sheet 1 of Wehran's Remedial Action Plan Addendum for CS

Buildings 5 and 5A (October 1993), only two of the five outfalls were in existence in 1993 (Outfall OF-01 to Sanders Creek and Outfall OF-02 to Ley Creek South Branch). Drainage from the area around Buildings 2, 3 and 4 flowed to an outfall at the end of Deere Road and discharged to Sanders Creek (see Figure 4). For the stormwater permit applications, sampling was conducted at each of the outfalls (see Section 4.2.1 of this report for a discussion of the analytical results). Limited sampling for VOCs was also conducted as part of the site investigation and remedial activities (Wehran, October 1993). In addition, samples of soil and sediment in the vicinity of the outfall from the former Building B area were collected and analyzed for lead (O'Brien & Gere, April 1991). As discussed in Section 4.2.1, this outfall to Sanders Creek was removed in 1991.

According to LMC, the CS plant did not discharge process wastewater to the nearby creeks and, therefore, was not required to obtain an individual SPDES wastewater permit (LMC, Mailing No. 3, p. 000286).

### **3.3 Groundwater**

Groundwater on and near the CS site can be contaminated directly from release of wastes to the drain system from former manufacturing and maintenance areas throughout the site (see Section 2.2) and subsequent exfiltration as well as from leaching of contaminants from soil. In addition, the USTs are also potential sources of contamination to the groundwater. The extent of groundwater and drain system contamination is described in Section 4.

### **3.4 Air**

As identified in the Phase I Site Assessment, three permitted air emission points were located in Building 4 (venting solvents) and 26 permitted air emission points were located in Building 5 (various pollutants). These emissions represent a local source of contaminants to the

atmosphere with subsequent potential deposition to the ground surface and runoff to the nearby creeks.

### **3.5 County Sewer System**

Sanitary and process wastewaters have been discharged to the municipal sewer system with final treatment at either the Ley Creek Municipal Sewage Treatment Facility or the Syracuse Metro plant. Both treatment facilities discharged to the upstream end of Onondaga Lake. According to the Onondaga County Department of Drainage and Sanitation (OCDDS) Industrial Wastewater Discharge Permit Number 24 for the CS facility issued in 1990, the following discharges were permitted to the County sewer system with treatment at the Syracuse Metro plant: sanitary wastewater; wastewater generated from processing photographic materials, process wastewater from Building 5, and occasional discharge of cleaning water from a paint-spray booth (maximum discharge of 500 gallons over 2 month period) (LMC, Mailing No. 3, p. 400021). According to an earlier version of this permit (1978 issue), the sanitary system discharged to the Ley Creek Wastewater Treatment Facility. A review of the analytical data associated with the sewer discharge submitted by GE and MMC is provided in Section 4.

## **4.0 LIKELIHOOD OF RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM**

### **4.1 Documented Releases**

#### Underground Storage Tanks

According to Wehran's Phase I Site Assessment Report (July 1991, pp. 300075 - 300081), thirteen, 250-gallon USTs containing solvents were located on the CS site: four were located near the southeastern corner of Building 2 and nine were located near the northwestern corner of Building 5 near the creeks. The solvent USTs were reportedly removed (no dates or details specified). Nine fuel-oil tanks (only one passed a leak test), ranging in size from 3,000 to 20,000 gallons, were removed by 1990. Contaminated soil was also removed at the time (quantity and quality not included in the report). One gasoline UST was removed in June 1989.

#### Transformers

Prior to 1989, a total of twelve PCB-containing transformers were located outdoors near Buildings 2 and 5A, at the pumphouse near Building 5, and indoors in Building 5. The transformers and PCB-voltage regulators outside of Building 5A were removed in 1989 and 1990 and shipped to the GE Buffalo Service Center. According to Wehran's Phase I Site Assessment, "records indicate that the established inspection and maintenance program for these PCB-containing units was only sporadically implemented, and leaks in at least one of these units may have occurred" (Wehran, July 1991, p. 300089). As of 1991, no soil samples from the transformer areas were collected and analyzed for PCBs and three PCB-contaminated units remained on site.

### Documented Spills

In Mailing No. 3, LMC provided a printout of reported spills (1987 to 1992) from the CS facility obtained from the NYSDEC Oil and Hazardous Material Spills database. Many of the spills, as stated in the printout, were reported during UST testing and removal.

### Ongoing/Recent Releases

Ongoing releases include the discharge of stormwater to the two creeks adjacent to the site via overland runoff and direct discharge from the storm sewer system. Also, a recommendation was made by Wehran to pump and treat (air stripping and filtration) the contaminated groundwater in the Buildings 5 and 5A area with a final discharge to Ley Creek South Branch (Wehran, October 1993, p. 301201). The Conceptual Plan (Wehran, October 1993, Sheet 4) shows the groundwater collection zone between Building 5 and Ley Creek South Branch (in the vicinity of Outfall 005, see Figure 3). The exact discharge location was not shown in the Conceptual Plan drawing. The referenced SPDES Discharge Permit Application (August 1993) and supporting documentation, which would show the location of the treatment system and new outfall, were not included in the responses. No flow or effluent data of the treatment system were provided.

## **4.2 Threat of Release to the Lake System**

### **4.2.1 Extent of Site Contamination**

This section evaluates the extent of site contamination at the three discrete areas of the Court Street site, including former Buildings B and C in the eastern portion of the site, Buildings 2, 3, and 4 in the central portion, and Buildings 5 and 5A in the western portion.

### Buildings B and C Contamination

A site investigation of the Court Street Building B area was performed by O'Brien & Gere Engineers for GE (April 1991). Surficial soil samples collected around Building B contained concentrations of lead (60 to 32,000 mg/kg total lead) greater than background (less than 100 mg/kg). TCLP tests were performed which indicated that lead was not leachable within the soil matrix (total lead less than 0.5 mg/L). Catch basin samples also contained elevated levels of lead in the sediment (590 to 280,000 mg/kg) and in the TCLP analyses (<0.5 to 130 mg/L total lead). A roof vent dust sample also contained an elevated concentration of total lead (220,000 mg/kg). Total lead concentrations in soil samples collected behind Building B ranged from less than 20 to 9,500 mg/kg. A soil sample near the storm sewer outfall at Sanders Creek contained 57,000 mg/kg of total lead. Three sediment samples collected in Sanders Creek upstream and downstream of the outfall contained less than 110 mg/kg total lead. Based on the results of this investigation, GE removed and drummed sediments from the catch basins, excavated a buried drum and waste pile near Sanders Creek, and covered the roof vents with polyethylene sheeting.

IT Corporation (December 1991) performed a Phase III investigation of the area to define the extent of lead-contaminated soil and to evaluate the impacts of the surficial lead on groundwater quality. Six monitoring wells were installed and developed in the summer of 1991. The wells were sampled in June and October 1991. Organic pesticides and PCBs were not detected in any of the samples from the two events. Dissolved lead was also not detected in the groundwater. Only minor amounts of lead were detected in the unfiltered sample which was likely attributed to the fine-grained suspended matter. Concentrations of lead were well below the 25 µg/L groundwater standard. Stream sediments were not sampled in the Phase III groundwater investigation. According to IT Corporation, "the lead contamination observed in surficial soils appear to be the result of fugitive emissions from the PZT material

manufacturing process...transported by wind and carried in a north to northeastern direction away from the facility” (IT Corp, December 1991, p. 301699).

Except for Monitoring Well 4, downgradient of Building B, no significant amounts of volatile organic compounds (VOCs) and semi-VOCs were measured in the groundwater samples from the six wells. In the two sampling events (June and October 1991), elevated concentrations of 1,2-dichloroethene, DCE (840 and 1,400  $\mu\text{g/L}$  or ppb) and trichloroethene, TCE (540 and 810  $\mu\text{g/L}$ ) were detected in well MW-4.

Wehran EnviroTech prepared a remedial plan for GE for lead-contaminated soils on the Court Street Building B property (June 1992). At the time of the study, Buildings A, B, and C and an electric power substation had been removed (November to December 1991). In May 1991, the catch basins, the related storm sewer piping and the outfall pipeline to Sanders Creek were removed. The excavations were lined and backfilled with crushed stone. Based on Wehran’s review, it was concluded that the most likely pathway for off-site lead transport is via overland runoff and not leaching from soils and groundwater transport. A soil-cleanup goal of 500 ppm (considered “conservative” by Wehran) was established to provide human health protection with future site workers as the receptor target group of concern (Wehran, June 1992, p. 300122). According to Wehran, the lead cleanup concentration was developed on a site-specific basis in collaboration with NYSDOH (p. 300124) and not on the OSHA PEL (Permissible Exposure Limit) for airborne lead of 50  $\mu\text{g/m}^3$ .

The former substation/transformer pad was located between Building C and Sanders Creek. Well MW-6 is located approximately 30 feet north of the former transformer pad (see Sheet 1 of Wehran, April 1993). As stated earlier, PCBs were not detected (less than 1  $\mu\text{g/L}$  per Aroclor) in groundwater at this location in 1991 (IT, December 1991). More recent PCB analyses of groundwater in this area, if available, were not provided. PCB analyses of soil samples in this area, if available, were also not provided.

Wehran EnviroTech (for Martin Marietta) issued a remedial action completion report for lead-contaminated soils in August 1993. Silt fences were placed during excavation along the banks of Sanders Creek and the drainage ditch near the eastern property boundary. Additional erosion-control measures utilized include hay bales to intercept runoff and burlap mesh to stabilize soils in recently excavated areas. Air monitoring was performed during the remediation with more than 97% of the 189 (perimeter and personal) samples containing non-detectable concentrations of total lead (less than 3  $\mu\text{g}/\text{m}^3$ ); five perimeter air samples contained detectable levels of lead ranging from 3 to 31  $\mu\text{g}/\text{m}^3$ . All samples were thus less than the OSHA Permissible Exposure Limit of 50  $\mu\text{g}/\text{m}^3$  for total lead (Wehran, August 1993, p. 300603).

Confirmatory soil samples were collected and analyzed for total lead after excavation (up to 18 inches in depth) to determine whether or not the lead cleanup goal (500 ppm) was met. In many cases, the concentration in the initial confirmatory sample following the excavation was below the cleanup level; in other cases, additional excavation was required. More than 100 final confirmatory samples were collected and analyzed to confirm that the cleanup goal had been attained (more than 96% less than 250 ppm). During the remediation, over 5,000 tons of non-hazardous (based on TCLP tests) lead-contaminated soils and 177 tons of C&D material were shipped to Seneca Meadows Landfill in Seneca Falls, New York (Wehran, August 1993, pp. 300614-300615).

Wehran EnviroTech also prepared, for Martin Marietta, a remedial action plan for solvent-contaminated soil and groundwater at Court Street Building B (April 1993). Soil gas surveys and geophysical investigations, including terrain conductivity measurements and ground-penetrating radar, revealed two potential VOC source areas downgradient (north) of Building B. Based on these investigations, ten soil borings and two additional monitoring wells were installed. Test pits were also installed revealing VOC contamination at depths ranging from two to eight feet below the ground surface.

The groundwater investigation revealed that the horizontal hydraulic gradient near Sanders Creek is 0.19 ft/ft indicating flow towards the creek. A vertical hydraulic gradient of 0.41 ft/ft was measured indicating that groundwater is flowing from the surficial zones of fill, clay, and silt deposits, to the lower stratigraphic clayey silt unit (Wehran, April 1993, p. 300347). Trace levels of VOC contamination, including TCE and DCE, were measured in surficial soils. The largest area of concern for chlorinated VOCs was determined to be immediately behind the former location of Buildings B and C in both the unsaturated and saturated soils. TCE concentrations in soil ranged from less than one to 150 mg/kg. As evidenced by IT Corporation in 1991, elevated levels of TCE and DCE were detected in groundwater samples in well MW-4, located behind the two buildings. TCE and DCE were also detected at elevated concentrations (2,000 µg/L and 1,400 µg/L, respectively) in 1992 at MW-4. These VOCs were not detected at elevated concentrations in other wells. According to Wehran, the VOCs from the Buildings B and C area have not likely impacted Sanders Creek (Wehran, April 1993, p. 300353), and is based on the absence of TCE and DCE in wells between the contaminated area and the creek.

The zone of contamination was estimated at 10,000 square feet extending to an average depth of 10 feet. Wehran recommended a pilot soil/groundwater treatment study consisting of soil-vapor extraction and groundwater pumping and/or air sparging. No information on the performance results of the pilot study or the full-scale treatment system was provided in the responses. It is not known from the responses whether treated groundwater from this area presently discharges to Sanders Creek.

#### Buildings 2, 3, and 4

Wehran prepared a Phase II Site Assessment for Buildings 2, 3, and 4 for GE (June 1992). Groundwater flow from this area is in a northerly direction towards Sanders Creek. All areas where actual or potential contamination were identified have been addressed and require no

further action (Wehran, June 1992, p. 300174). Activities included cleanup of indoor PCB oil spills and confirmatory floor-core sampling for PCBs. In all cases, no residual PCB contamination was evident. In addition, routine closure activities were performed including the removal of non-hazardous ash in the abandoned incinerator near Building 3 and asbestos-containing materials.

#### Buildings 5 and 5A PCB Contamination

Wehran prepared a Phase II Site Assessment for Buildings 5 and 5A in 1992 for GE with a revision in 1994 for MMC. Site closure activities were performed during this period, including remediation of asbestos-containing materials, removal of contaminated floor tiles, cleanup of an oil spill, and decontamination of areas identified as “potentially containing residual process contamination”. According to Wehran, all areas where actual or potential residual contamination were identified have been addressed and require no further action (Wehran, January 1994, p. 301531). Confirmatory floor-coring samples in Building 5 and wipe samples from three outdoor transformer pads indicated compliance with USEPA’s cleanup criteria for PCBs.

Lockheed Martin provided information on a soil removal project near Building 5A in Mailing No.4 (October 27, 1995). Phase I and Phase II Environmental Assessment Reports of the Building 5A property were prepared by C&H Engineers for a potential buyer (December 1994 and February 1995). Three surficial wipe samples on the concrete transformer pad along the west exterior wall of the building contained concentrations of PCBs (2.2 to 7.7  $\mu\text{g}/100\text{cm}^2$ ) less than EPA’s decontamination criteria of 10  $\mu\text{g}/100\text{cm}^2$ . A composite soil sample collected near the outlet of the sump drain near the pad contained a concentration of PCBs (27.4 mg/kg or ppm) greater than the 10 ppm cleanup criteria (C&H, February 1995, p. 302184). Also, a sediment sample collected from an interior floor drain sump contained

PCBs (45.5 mg/kg). C&H recommended soil excavation and disposal, removal of sediments in the interior floor drains and sumps, and confirmatory sampling in both areas.

Martin Marietta retained the services of Action Technical Services, Inc. to perform the remedial work. As stated by LMC, soil was excavated from “an area adjacent to the transformer pad on the west side of Building 5A measuring approximately 20 feet long by 3 feet wide by 3 feet deep to achieve a cleanup level of less than 10 mg/kg PCBs in the remaining soils; confirmatory samples collected from the bottom and side walls of the excavation...did not contain detectable PCBs (less than 1 mg/kg, ppm); the soil was disposed as a nonregulated material” (LMC, Mailing No. 4, pp. 302134-302135). Wastes (sediment and water) from fourteen interior floor drains and a sump were also removed and properly disposed. The material was transported off-site for disposal as hazardous waste. According to the manifests, the wastes were transported by Laidlaw Environmental Services to a disposal facility in Georgia. As a result of the confirmatory sampling and the fact that the sump discharged to the sanitary sewer system during GE’s operations, LMC concluded that PCB impacts to the environment did not occur and the only remaining environmental issues at the site are limited to VOCs (see below) (LMC, Mailing No. 4, pp. 302135-302136).

#### Buildings 5 and 5A Solvent Contamination

A Remedial Action Plan (Addendum) for the Buildings 5 and 5A Inactive Solvent Dispensing Area was prepared by Wehran for Martin Marietta (October 1993). Solvent contamination resulted from leaking USTs. Soil, groundwater and off-site creek sediment samples were collected and analyzed to determine the extent of contamination. It was determined that groundwater in the unconfined aquifer is discharging into both Sanders Creek and Ley Creek South Branch. The most significant VOC in this area was determined to be 1,1-dichloroethane (DCA) with lesser amounts of vinyl chloride (VC), 1,1-dichloroethene (DCE), 1,1,1-trichloroethane (TCA), and aromatic compounds such as toluene, ethylbenzene, and

xylenes. DCA was detected in many of the existing and newly-installed monitoring wells between the creeks and Building 5 in May and June 1993 with concentrations ranging from 2 µg/L (MW-12S) to 26,000 µg/L (MW-1S, located near the former solvent pad). Wells MW-6S (7,700 µg/L) and MW-7S (1,900 and 3,600 µg/L), both located between the former UST excavation area and Ley Creek South Branch, also contained elevated concentrations of DCA in the groundwater. DCA was not detected in Well MW-14, located on the opposite side of Ley Creek South Branch, in June 1993.

TCE was detected at a concentration of 500 mg/kg in soils on the bank of Ley Creek South Branch about 200 feet west of the former UST at the northwest corner of Building 5. TCE was detected in the surface water of Ley Creek South Branch at low concentrations (less than 5 µg/L). Stream sediment cores were also taken at five locations in Ley Creek South Branch. The sediment samples were screened with a photoionization detector (PID) with results less than 1 ppm at numerous vertical sections throughout the cores. The sediment samples were not analyzed in a laboratory. PCB analyses were not performed in any of these samples.

Wehran concluded that the storm drain discharging to Ley Creek South Branch conveyed contaminated water resulting from historic leaks or spills distributed within the drain pipe or the bedding material and not from infiltration of contaminated groundwater (Wehran, October 1993, p. 301197). Nearly 500 feet of the existing drain pipe was removed and replaced with PVC pipe. The remediation also consisted of the removal of about 20 cubic yards of potentially-contaminated soil and pipe sediment and about 40 yards of uncontaminated overburden soils and asphalt. Based on sampling of groundwater seepage discharging from the outfall after replacement of the piping, Wehran concluded that the IRM was successful in mitigating uncontrolled discharges of VOCs via the storm drain (p. 301197). The final proposed remedial plan includes a groundwater collection drain with subsequent treatment. The proposed drain is approximately 670 feet in length with a depth of nine to twelve feet below ground surface. Groundwater would be collected in a four-foot diameter sump and

pumped to an on-site air stripping treatment system and would discharge to Ley Creek South Branch. Neither the SPDES discharge permit nor actual effluent data from the treatment system to the creek (performance results) were included in the responses.

### Sewer Discharges

As stated in Section 3, sanitary and process wastewaters were discharged to the municipal sewer system with final treatment at either the Ley Creek Municipal Sewage Treatment Plant or the Syracuse Metro Plant. According to a 1990 Onondaga County Industrial Waste Questionnaire, approximately 100,000 gpd of process wastewater and 20,000 gpd of non-contact cooling water was released to the sanitary sewer system (LMC, Mailing No. 3, p. 302004). No analytical data sheets were included in the responses. As stated by GE in a 1983 Questionnaire, "the latest complete analysis showed our pH at 7.5 and a relatively low BOD<sub>5</sub> and TSS; the heavy metals contained in the wastewater include: total chromium at 5% of the county limits; total copper at 10% of the county limits; lead at 16% of the county limits; nickel at 1% of the county limits; and zinc at 3% of the county limits" (p. 302025). Data for additional contaminants, including PCBs, was not provided.

### Surface Water Discharges

In addition to limited discharge data collected as part of environmental assessment activities (see above), analytical data of discharges at each of the outfalls to Ley Creek South Branch and Sanders Creek were provided in the SPDES permit applications to discharge stormwater associated with industrial activities (GE, October 1992). Analyses for conventional parameters, inorganics/metals, and VOCs were performed on each outfall sample. Dichloroethane (DCA) was detected in the outfall 004 grab sample (17 µg/L) discharging to Sanders Creek. The grab sample from Outfall 005 which discharges to Ley Creek South Branch contained DCA (35 µg/L), TCA (110 µg/L) and TCE (210 µg/L). VOCs were not

detected in the remaining outfall samples. Inorganics were not detected at elevated concentrations in these outfall samples (all less than 1 mg/L). PCB analyses were not performed on these stormwater samples.

#### **4.2.2 Migration Potential of Contaminants**

The primary contaminants of concern at the Court Street site are lead, PCBs, and VOCs (DCA and TCE). As described above, several remedial measures performed to date, including removal of USTs and excavation and off-site disposal of contaminated soils, have reduced the quantities of these hazardous substances on site as well as the migration potential of the contaminants. Also, the proposed remedial measures for handling VOC-contaminated groundwater, if properly implemented, will also reduce contaminant migration. Thus, while the potential for future migration of contaminants from the site into the lake system is relatively low since much of the contamination has been removed or will be potentially remediated through groundwater treatment processes, there is documented historical transport of site contaminants into the lake system.

## **5.0 POTENTIAL FOR ADVERSE IMPACTS TO LAKE SYSTEM DUE TO A RELEASE OR THREAT OF A RELEASE**

### **5.1 Hazardous Substance Characteristics**

Based on past operations at the site and elevated concentrations in either groundwater, soil, or drain/sump sediments, lead, PCBs, and VOCs are considered the primary substances of concern at the Court Street site. As stated above, several remedial measures performed to date have reduced the quantities of hazardous substances on site. A discussion of hazardous substance characteristics for each contaminant is provided below.

#### Mobility

In the naturally hard waters in and around the site, lead solubility is expected to be very low and thus dissolved lead transport may not be great. Elemental lead is essentially insoluble under natural water conditions. As a result, site lead will be associated with soil particles and lead mobility will, in part, be governed by the same processes responsible for soil movement, i.e., surface water flow, particle size and depositional environment. Given the elevated concentrations of lead measured in the soil and outfall sediments adjacent to Sanders Creek, it is possible that lead has historically been transported off site and into the Onondaga Lake system. Once deposited on the creek or lake bottom, there exists the potential for reduction and remobilization of lead from the reducing sediments to the overlying waters.

PCBs generally have limited mobility in the environment since PCBs have a low vapor pressure and low water solubility. PCBs analyses of creek sediments were not performed. Thus, the extent of PCB transport from the site via soil migration cannot be determined.

VOCs, including chlorinated organic compounds such as TCE, DCA, and DCE, rapidly volatilize into the atmosphere and, thus, volatilization is considered the most important fate and transport process of VOCs in surface water and in surficial soil. Most importantly, VOCs are highly mobile in soil and leach into the groundwater fairly readily, and movement in groundwater is generally not severely retarded.

### Toxicity

Lead may adversely affect survival, growth, reproduction, development, and metabolism of most species under controlled conditions, but its effects are substantially modified by physical, chemical and biological variables (Eisler, 1988). Lead is classified as B2, a probable human carcinogen, based on rat and mouse studies with dietary and subcutaneous exposure to several soluble lead salts (USEPA, 1995). In humans, ingestion of lead leads to symptoms such as loss of appetite, anemia, malaise, insomnia, headaches, irritability, muscle and joint pains, tremors, hallucination and distorted perceptions, muscle weakness, gastritis and liver changes. Ingestion also produces cardiac lesions and abnormalities in electrocardiograms. There is evidence of teratogenicity in fetuses when pregnant women are exposed to lead and exposed fetuses may exhibit neurobehavioral dysfunctions. Studies for mutagenicity have determined that lead causes structural chromosomal aberrations.

PCBs have been shown to cause many toxicological responses including carcinogenic, reproductive, teratogenic, neurologic/developmental, systemic and immunological effects. PCBs are classified B2, probable human carcinogens, based on hepatocellular carcinomas in rodent studies and inadequate yet suggestive evidence of excess risk of liver cancer in humans by ingestion and inhalation or dermal contact (USEPA, 1995). Studies have demonstrated that endpoints as a result of exposure to PCBs have shifted with time, differ among species, and are dependent on dose and exposure duration.

TCE was found to be carcinogenic to mice after oral administration, however, it was not found to cause reproductive toxicity. Chronic inhalation exposure to elevated concentrations of TCE caused liver, kidney, and neural damage and dermatological reactions in animals. Limited data are available on toxicity of TCE to aquatic organisms. The acute toxicity  $LC_{50}$  concentration for freshwater species was estimated to be about 50 mg/L in water (USEPA, September 1985). DCA and DCE are also considered carcinogenic and toxic. In animal studies, these chemicals have caused liver, kidney, and lung damage, as well as nervous system disturbances (USDOH&HS).

### Persistence

Lead is very persistent in both water and soil. Since lead is an element, it cannot be broken down at all and its concentrations in environmental media are governed solely by dilution mechanisms. In the environment, lead can be transformed from inorganic to organic forms, affecting its toxicity, but ultimately only dilution or removal affect its presence.

PCBs are persistent in the environment due to their high stability and relative inertness. In aquatic systems, low amounts of PCBs are found dissolved in the water column due to their low solubility and preferential partitioning to suspended matter and sediment. In these systems, PCB transport and persistence is generally governed by the particle transport processes. PCBs have been shown to degrade to a limited extent via dechlorination.

The relative short half-life of the VOCs of concern in the atmosphere (high vapor pressure) indicates that they are not persistent atmospheric compounds. As stated above, VOCs in surface waters or surficial soils will predominantly volatilize into the atmosphere and are thus not persistent in those media. In subsurface soils where volatilization cannot occur, TCE, and VOCs in general, may be relatively persistent since they are slowly degraded (US DOH&HS, October 1991).

### Bioaccumulation

Lead tends to bioaccumulate/bioconcentrate within living organisms. However, there is no convincing evidence that it is transferred through food chains (Wong et al., 1978; Settle and Patterson, 1980). In surface water, lead concentrations are usually highest in benthic organisms and algae and lowest in upper trophic level predators (e.g. carnivorous fish).

PCBs are very lipophilic and thus tend to bioaccumulate/bioconcentrate within living organisms. Significant levels of PCBs may often be detected in tissue of biota living in contaminated areas because organisms contain lipids, *e.g.*, fat-molecules such as glycerides and cholesterol. The more PCBs which are absorbed and remain in the organism, the greater the potential for toxic responses.

Potential for weak to moderate bioaccumulation of TCE, DCE, and DCA exists, however, no evidence of biomagnification has been found (USEPA, December 1979).

## **5.2 Quantity of Substance**

Estimates of the mass of contaminants released to the soil and groundwater and remaining on-site were not provided by either GE or MMC/LMC. Spill quantities were not provided for many of the documented releases. Estimates of the mass of contaminants released to Sanders Creek, Ley Creek South Branch and the County sewer system cannot be made based on the data provided.

### **5.3 Levels of Contaminants**

The extent of on-site contamination was discussed in Section 4.2. Elevated levels of lead were detected in soil (32,000 mg/kg), sewer/catchbasin sediments (280,000 mg/kg), outfall sediments (57,000 mg/kg), Sanders Creek sediments (110 mg/kg), and dust samples (220,000 mg/kg). Also, select VOCs were detected at elevated concentrations in groundwater (up to 26,000 µg/L) and stormwater discharge samples (17 to 210 µg/L). PCBs were detected in soils and sump sediments (less than 50 mg/kg). Creek sediment samples were only laboratory-analyzed for total lead and were less than 110 mg/kg..

### **5.4 Impacts on Special Status Areas**

The Court Street site is not situated in an area where direct future adverse impact to protected habitats or streams is likely to occur. Both Sanders Creek and Ley Creek South Branch near the site are currently Class C streams and are thus not considered "protected streams" in New York State. The nearest State Freshwater Wetland is approximately one-third of a mile north of the site along the southern side of the New York State Thruway near Ley Creek.

## **6.0 SUMMARY OF CONCERNS**

Based on the data and information provided by both companies, the following concerns are identified:

- Potential historic release of contaminants, including PCBs, to the sanitary sewer system; and
- Potential historic release of contaminants, including lead, PCBs, and VOCs, via the floor sumps and storm drain system directly to Sanders Creek and Ley Creek South Branch.

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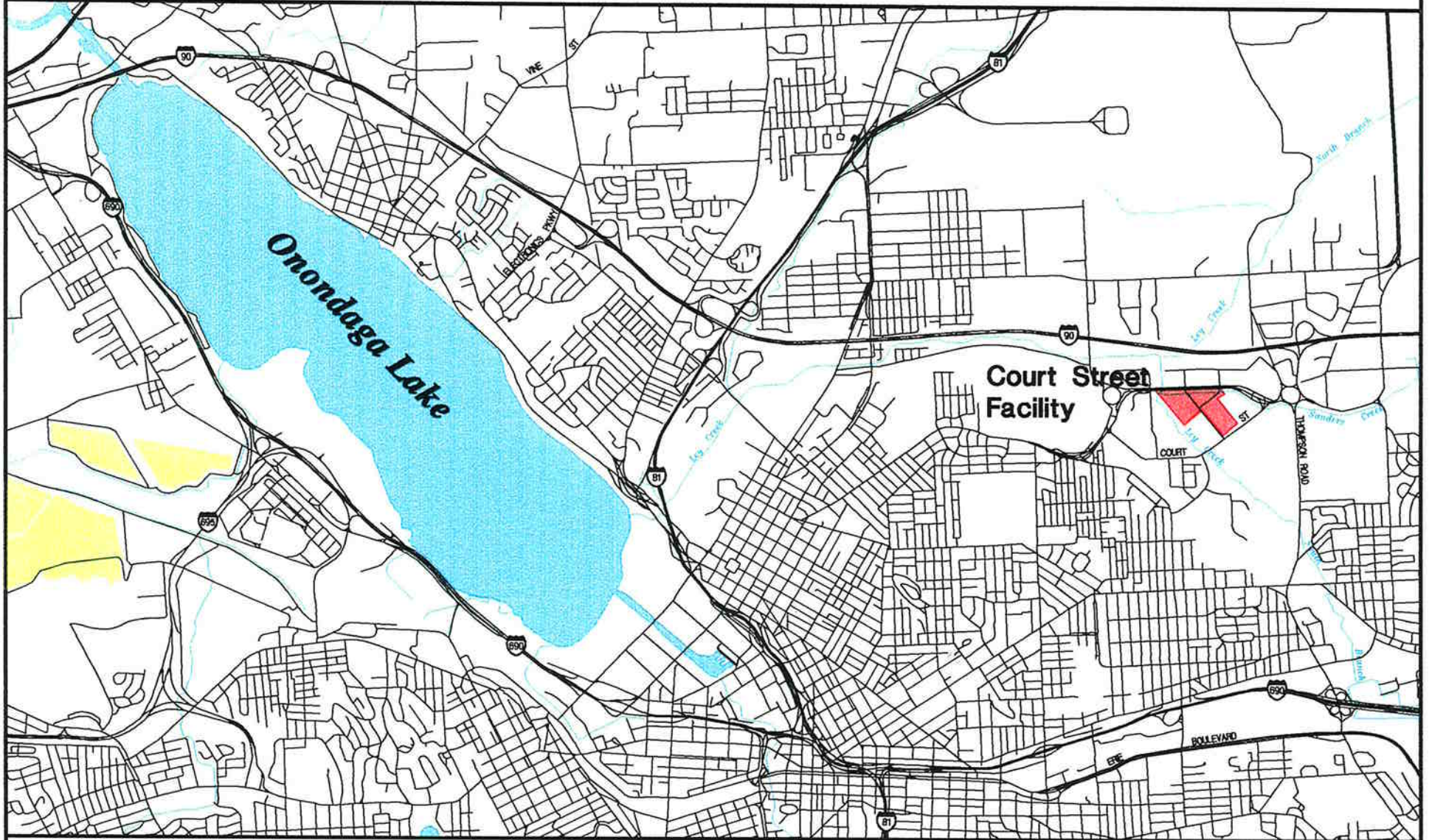
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# Site Location: Lockheed Martin Court Street Facility



Site Location

5000 0 5000

Scale In Feet

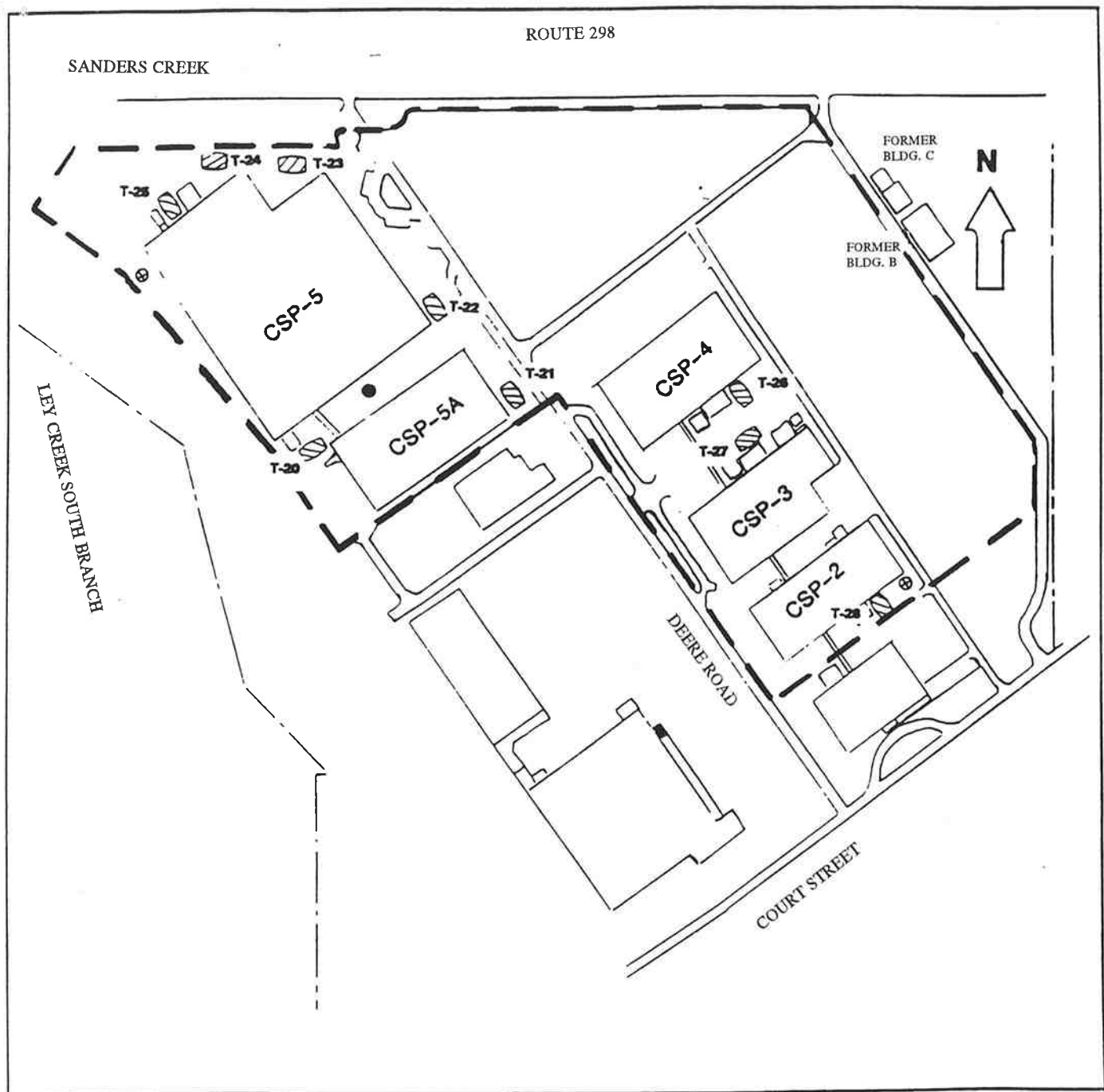
1500 0 1500

Scale In Meters

Figure 1



TAMS



- — Limit of Study Area
- T-28 Former Location - Fuel Oil UST
- ⊕ Former Location - Solvent UST
- Former Location - Gasoline UST

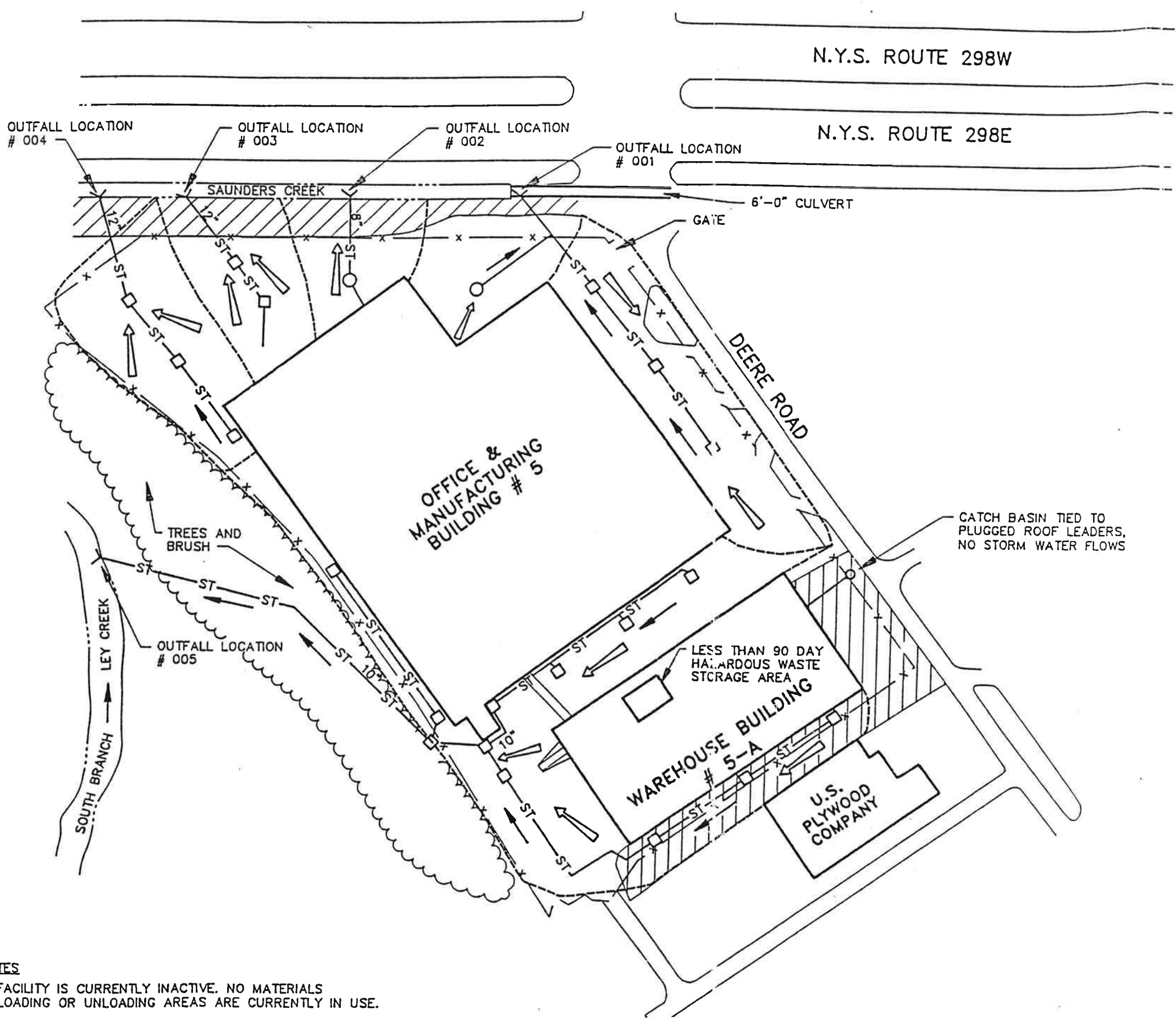
Drawing not to scale.

SOURCE: GENERAL ELECTRIC INDUSTRIAL PARK PLOT PLAN

FIGURE 2

## STUDY AREA

GENERAL ELECTRIC COURT STREET FACILITY  
DE WITT, NEW YORK



**LEGEND**

- DRAINAGE AREA BOUNDARY LINE
- DIRECTION OF FLOW IN STORM WATER PIPE
- DIRECTION OF STORM WATER RUNOFF
- ▨ GRASS AREA
- ST - ST - STORM WATER PIPE
- CATCH BASIN
- MANHOLE
- x - x - FENCE

100' 0 100'  
APPROXIMATE SCALE : 1" = 100'

GENERAL ELECTRIC COMPANY  
SYRACUSE, NEW YORK

**COURT STREET FACILITY  
BUILDING 5, 5A**

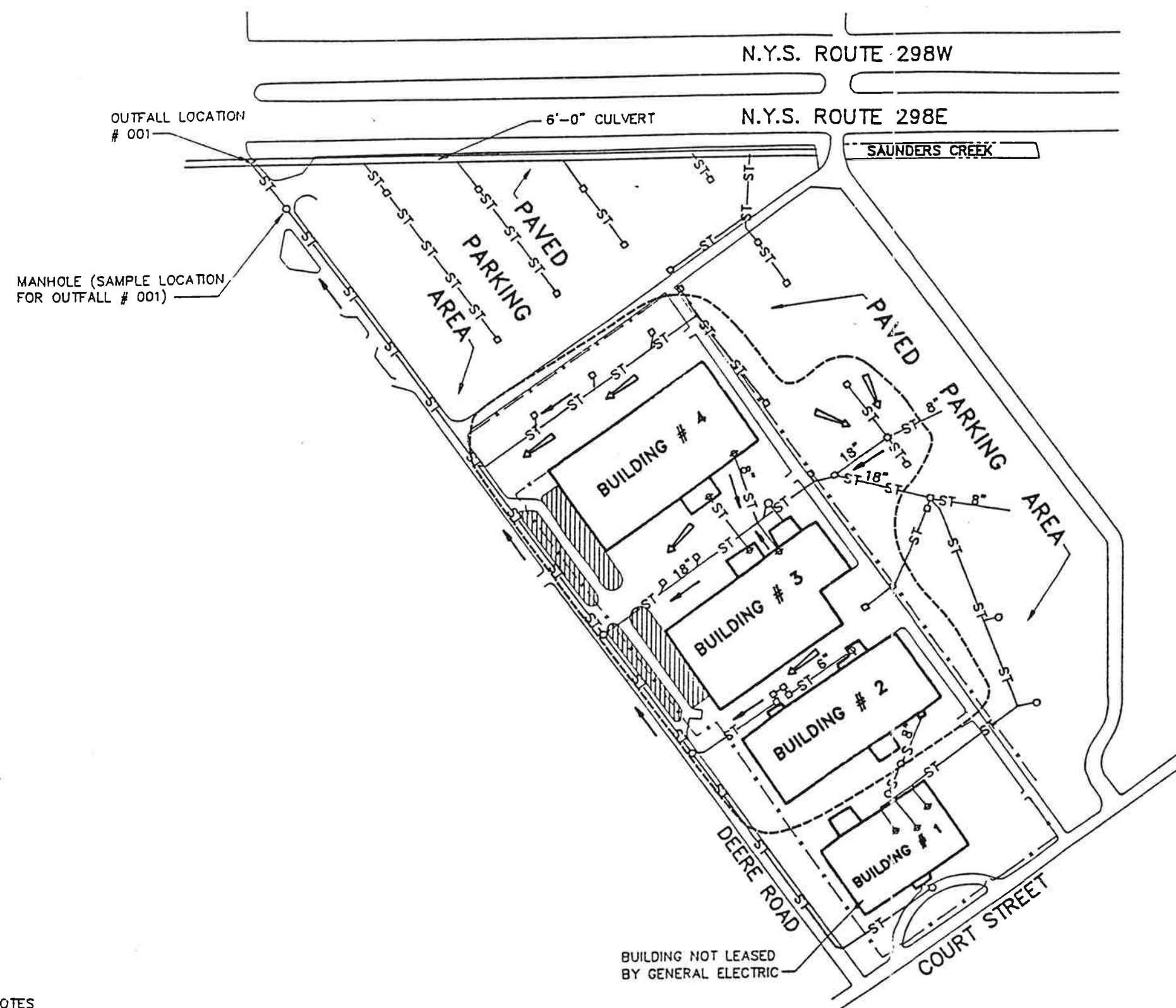
FIGURE 3

**SITE PLAN WITH  
OUTFALL LOCATIONS**

**B/E**  
BLASLAND & BOUCK ENGINEERS, P.C.  
ENGINEERS & GEOSCIENTISTS

**NOTES**  
1. FACILITY IS CURRENTLY INACTIVE. NO MATERIALS  
LOADING OR UNLOADING AREAS ARE CURRENTLY IN USE.

Source: General Electric Company Court Street Facility Buildings 5, 5A Stormwater Discharge Permit Application, October 1, 1992



# COURT STREET FACILITY BUILDINGS 2, 3, 4

FIGURE 4

## SITE PLAN WITH OUTFALL LOCATIONS

### NOTES

1. FACILITY IS CURRENTLY INACTIVE. NO MATERIALS LOADING OR UNLOADING AREAS ARE IN USE. NO HAZARDOUS WASTES ARE STORED AT FACILITY.

Source: General Electric Company Court Street Facility Buildings 2, 3, 4 Stormwater Discharge Permit Application, October 1, 1992

300060

BLASLAND & BOUCK ENGINEERS, P.C.  
ENGINEERS & GEOSCIENTISTS